



IEEE CINCINNATI SECTION NEWSLETTER - MARCH 2008

MARCH MEETING **FUNCTIONAL MRI**

DATE: Thursday, March 27, 2008
PLACE : Raffel's – 10160 Reading Road (see below for directions)
TIME : 5:30 p.m. to 6:00 p.m. - Social Time
6:00 p.m. to 7:00 p.m. - Dinner
7:00 p.m. to 8:30 p.m. - Presentation

COST FOR DINNER: \$10.00 per person – REGARDLESS OF MEMBERSHIP OR MEMBERSHIP GRADE!

NOTE: DINNERS ARE ALWAYS OPTIONAL - YOU MAY ATTEND THE PROGRAM ONLY.

MENU SELECTIONS: Chicken Cordon Bleu, Creole with Shrimp and Scallops, Beef Stroganoff, Parsley Buttered Potatoes, Broccoli with Cheese, Tossed Salad, Rolls, Apple and Peach Cobblers, Coffee, Tea, Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks.

LOCATION: Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately $\frac{3}{4}$ of a mile to Reading Rd. and turn right on Reading.

RESERVATIONS: Please email Fred Nadeau for reservations at <mailto:fnadeau1@earthlink.net> (preferred) or call the Section Voice Mail at 513-629-9380 by **Noon, Tuesday, Mar. 25, 2008** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number.

PE CREDITS: Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses. Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

ABOUT THE MEETING: Dr. Scott Holland (<http://www.irc.cchmc.org/people/faculty.php>), a member of the Cincinnati EMBS chapter, has graciously agreed to give a presentation on functional MRI of the brain.

ABOUT THE SPEAKER: Scott Holland is a physicist by training with a B.S. degree (1980) in Physics from Muhlenberg College, Allentown, PA. and M.S. (1982) and Ph.D. (1985) degrees in Engineering and Applied Science from Yale University. After a year (1985-86) as a Research Engineer with the Electromagnetic Sciences Laboratory at Stanford Research Institute (SRI International), Menlo Park, CA, Scott returned to the Yale

School of Medicine as a post-doctoral fellow (1986-88) and later as an Assistant Professor (1988-94) of Diagnostic Radiology. He joined the faculty of the University of Cincinnati College of Medicine in 1994 as Associate Professor of Radiology and Pediatrics and served as Scientific Director of the Imaging Research Center at Children's Hospital Medical Center until 2003. His research currently focuses on pediatric neuroimaging applications of MRI at high field; including perfusion MRI, functional MRI, microimaging of transgenic mice, and image processing methods.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Nakul Bali	Cathy Haglund	Ambrose E. Ononye
James Brown	Jared Hatfield	Nathan Wyatt Pauley
Lou Cedrone	Praveen K. Kakumanu	Mithun Perdoor
James D. Cobb	Mrityunjay Kant	David L. Renz
Eric Core	Edzel Racs Lapira	Albert M. Stem
Clay Dubendorfer	Tom Lewnard	Natalie Teuschler
Chopper A. Eckhoff	Charles E. Lockhart	Steven Lee Upchurch
Frank Gruber	Jennifer Marie Lonneman	Shulamite Wan

We wish to welcome these new members to the Cincinnati Section!!!

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Bob Morrison, Editor

Copyright 1991 IEEE. Reprinted with permission from the IEEE publication, "Scanning the Past" which covers a reprint of an article appearing in the Proceedings of the IEEE Vol. 79, No. 11, November 1991.

Browder J. Thompson

The November 1941 issue of the PROCEEDINGS OF THE IRE (Institute of Radio Engineers) included a paper on secondary-emission electron multipliers by Browder J. Thompson for whom an annual award still presented by the IEEE was later named. At the time of the paper, he worked for the Radio Corporation of America (RCA) in Harrison, New Jersey. The same issue of the PROCEEDINGS contained two other technical papers on electron multipliers by RCA engineers. Television pioneer, Philo T. Farnsworth, patented an electron multiplier in 1934 and used it in his image-dissector camera tube. RCA engineers investigated television and other applications of electron multiplication during the 1930's. One application introduced during World War II employed an electron multiplier tube as a noise source for electronic countermeasures transmitters.

In his 1941 paper, Thompson discussed the use of electron multiplication in a grid-controlled vacuum-tube amplifier. He suggested that such a tube might be used to advantage in ultrahigh-frequency applications where input capacitance was a serious problem. His analysis indicated that the use of electron multiplication could reduce input capacitance substantially. He noted that the signal-to-noise ratio was not improved compared to more conventional tubes. In a subsequent paper published in 1943, Thompson commented that "vacuum-tube design is a subject which has intrigued many workers, largely one may suspect, because it has presented many possibilities for ingenious methods of analysis."

Thompson was born in the small town of Roanoke, Louisiana, in 1904 and received a B.S. degree in electrical engineering from the University of Washington in 1925. From 1926 to 1931, he worked on the design and development of vacuum tubes at the General Electric Research Laboratory. He moved to RCA in 1931, where

he participated in the development of miniature vacuum tubes suitable for high-frequency applications. The commercial version of these tubes became commonly known as "acorn tubes" because of their physical resemblance to acorns. The significance of this work was recognized when Thompson received the Morris Liebmann Prize from the IRE in 1936. He became a member of the IRE Board of Directors in 1937 and a Fellow of the IRE in 1938. He was named the associate director of research at RCA's laboratory in Princeton, New Jersey, in 1942.

Late in 1943, Edward Bowles recruited Thompson to become a special consultant to the Secretary of War. Thompson was assigned to supervise a special secret project and insisted that he be permitted to be an observer on an aerial mission in the theater of combat to gain firsthand understanding of the problem. Tragically, he was killed when his plane crashed in enemy territory in early July 1944. Friends and former colleagues established an endowment fund to support the Browder J. Thompson Memorial Prize Award, given to an author or authors under the age of 30 of an outstanding IRE paper. The award first was given by the IRE in 1946 and has continued as an IEEE award to the present. A list of the recipients through 1991 may be found in the current IEEE Membership Directory. A PROCEEDINGS paper has won this award many times, including the 1991 award given to K. K. Parhi for his paper " Algorithm Transformation Techniques for Coherent Processors" in the December 1989 issue.

*James E. Brittain
School of History , Technology and Society
Georgia Institute of Technology*

INECOM ENTERTAINMENT SETS STREET DATE OF APRIL 8, 2008 FOR WESTINGHOUSE

Pittsburgh, PA - Inecom Entertainment Company announced that its new film, *Westinghouse*, will be available in stores nationwide on Tuesday, April 8, 2008. Preorders for the film are already being taken through Internet retailers such as Amazon.com. [Click here](#) for a sneak preview of the film.

Westinghouse is a feature-length documentary about the life and times of George Westinghouse, his companies, legacy, personality and achievements. George Westinghouse is considered America's greatest industrialist and the only man who would go up against Thomas Edison, and win.

His victory over Edison during the Battle of the Currents set the stage for the entire future of electric power and the Westinghouse air brake is considered one of the most important inventions in history. Automobile shock absorbers, railroad signaling and the modern day weekend all owe their existence to the man who Andrew Carnegie called "A genius who can't be downed."

His spirit lived on for decades when his former companies created the golden age of American-made appliances, machines and technologies. Westinghouse Electric dominated the 1939 World's Fair with Elektro, the talking robot, and the Battle of the Centuries dishwashing contest. The "You can be SURE... if it's Westinghouse" slogan was used in ads that featured Ronald Reagan promoting home appliances.

Westinghouse may be most famous for the massive companies that he created, but the man called "Uncle George" was a reserved, creative giant who went out of his way to treat his workforce with dignity and respect. He was an honest millionaire in the days of robber barons, an optimist in the days of skeptics and a generous CEO from whom today's executives can learn.

Westinghouse was filmed in cooperation with the George Westinghouse Museum and features rare and never before seen footage, industrial films and photos previously buried deep within the Westinghouse archives.

Filmed in High Definition, the film includes an interview with George Westinghouse Museum Executive Director, Edward J. Reis.

Director Mark Bussler's credits include *EXPO - Magic of the White City* narrated by Gene Wilder, *World War I - American Legacy* narrated by David Carradine, *Horses of Gettysburg* narrated by Ronald F. Maxwell, *Gettysburg and Stories of Valor* narrated by Keith Carradine and *Johnstown Flood* narrated by Richard Dreyfuss.

IEEE NEWS

Georgia School Wins IEEE-Sponsored Best Essay Award at Future City Competition National Finals
WASHINGTON (22 February 2008)-- Queen of Angels Catholic School of Roswell, Ga., won the Best Essay Award at the National Engineers Week Future City Competition National Finals on Wednesday.

The IEEE sponsored the essay competition, which featured the 36 Future City regional-winning middle school teams that advanced to the finals at the Hyatt Regency Washington on Capitol Hill.

The team included students Joel Anderson, Elliott Brewer and Reed Scott, teacher-sponsor Peggy DeGance and engineer-mentor Catherine Anderson. IEEE-USA President Russ Lefevre presented each team member with a plaque.

Teams competing at the Future City finals had to write an essay as part of the overall judging. This year's topic was "Keeping Our Future City's Infrastructure Healthy: Using Nanotechnology to Monitor City Structures and Systems."

Queen of Angels' city, "Makt Stad" -- Swedish for "Power City" -- is set in 2215. Its water system uses nanosensors to monitor for disease-causing bacteria, e.g., e-coli, salmonella and giardia; toxic contaminants like cyanide, thallium and xylenes; harmful living organisms such as plankton; and bioterrorism agents, namely "botulism, smallpox, anthrax, plague, viral hemorrhagic fevers and tularemia."

If the intake filters get clogged and water flow decreases by five percent, "the nanosensors will activate a filter cleaner and e-mail a cleaning report to the system controller." The water is suctioned into a holding tank, where magnetic nanobots are added to heat the contaminants until they are eradicated.

The students then described the role engineers played in designing the water filtration system: "Mechanical engineers designed the pipe system, holding tanks, filters, and the nanobot delivery/magnetic retrieval system. Electrical engineers designed the power grid for the plant. They also worked with chemical engineers to design the chemical sensors. Robotic engineers manufactured the nanobots that heat up the contaminants. Computer engineers computerized the entire system, minimizing human intervention."

To read the entire Queen of Angels' essay, go to http://www.futurecity.org/alumni_profiles_maktstad.htm.

The Future City Competition, conceived in IEEE-USA offices in 1992 and staged for the first time during Engineers Week 1993, is designed to encourage the future generation of engineers. Seventh and eighth grade students create their own vision of a future city, working first on computer and then constructing three-dimensional scale models.

More than 1,100 schools and 30,000 students from across the United States competed during the 2007-08 season. Pilot programs are underway in Egypt, Sweden and Japan. A spin-off, "Future Cities 2020," has started in India.

Heritage Middle School of Westerville, Ohio, won the overall competition for their future city, “Ra.” See www.futurecity.org or www.eweek.org for additional information.

For more on the early history of the program, visit <http://www.todaysengineer.org/2008/Feb/FCC.asp>.

Iowa School Wins IEEE-USA National Engineering Award

WASHINGTON (22 February 2008) -- Harding Middle School of Cedar Rapids, Iowa, won the IEEE-USA Best Communications System Award during the National Engineers Week Future City Competition National Finals on Wednesday. The award was presented to Harding at the Hyatt Regency Washington on Capitol Hill for the most “efficient and accurate communications system.”

The team included students Emily O’Brien, 13; Courtney Strait, 13; and Stephanie Wenclawski, 14; engineer-mentor Gary Bishop; and teacher-sponsor Jean Oberbroeckling. Bishop is an IEEE member who works for Rockwell Collins in Cedar Rapids.

The Future City Competition, which IEEE-USA introduced to Engineers Week (EWeek) in 1993, is designed to encourage the future generation of engineers. Seventh and eighth grade students create their own vision of a future city, working first on computer and then constructing three-dimensional scale models. More than 1,100 schools and 30,000 students from across the United States competed during the 2007-08 season. Pilot programs are underway in Egypt, Sweden and Japan. A spin-off, “Future Cities 2020,” is underway in India.

Harding earned its trip to Washington by winning the Iowa regional competition last month. Its city, “Celestial,” is set in the Amazon rainforest in 2074.

Celestial’s communications system features “xMax,” which the students described in their city brochure as providing “a fast, non-line of sight connectivity between a user and a cell tower. ... Because xMax utilizes single cycle modulation, it requires significantly less radio frequency (RF) energy.”

The system also features “Smart Home Programming,” which can be activated from a cellular device to turn on your lights and heat, turn off your water system, notify you in case of a problem in your home, and contact a worker to make the necessary repairs.

IEEE members Amarjeet Basra of Annandale, Va., and Ananthram Swami of Silver Spring, Md., selected Harding from among the 36 teams that competed at the finals. The judging was done Monday.

“We were impressed that they thought about non-line of sight issues, energy and propagation range,” Swami said. “Plus, they had built-in redundancy.”

Basra complimented the students on their thorough presentation. “They had good ideas and presented them well,” he said. “All three students participated and they were able to answer all the questions.”

IEEE-USA President Russ Lefevre presented each team member with a plaque. The students will each later receive a \$100 U.S. Savings Bond. Harding also won the People’s Choice Award, an honor voted on by all the Future City National Finals students.

Heritage Middle School of Westerville, Ohio, won the overall competition for their future city, “Ra.” See www.futurecity.org or www.eweek.org for additional information.

When the first Future City Competition was staged, about 600 students and 175 schools participated across five regions. For more on the early history of the program, go to <http://www.todaysengineer.org/2008/Feb/FCC.asp>.

Mike Andrews, chair of the Future City Advisory Board and coordinator of the Phoenix region, is one of many IEEE members who hold leadership roles within Future City. The other IEEE-member regional coordinators are: Sonya Hutchinson (Alabama region), Dan O'Malley (Northern California), Osama Mohammed (Florida), Todd Hiemer (Oklahoma), Jean Eason (North Texas), Zafar Taqvi (Houston) and Karen Pavletich (Washington State).

IEEE-USA RECOGNIZES WINNERS OF ONLINE ENGINEERING VIDEO SCHOLARSHIP COMPETITION FOR UNDERGRADUATES

Undergraduate engineering students from three universities have been recognized by IEEE-USA for their winning entries in the organization's first "How Engineers Make a World of Difference" online engineering video scholarship competition. On 21 February, during Engineers Week, IEEE-USA Communications Vice President Paul Kostek announced the winners of \$6,000 in scholarship awards: first prize (\$2,500) to Ben Toler and Emile Frey of Louisiana Tech University, Ruston; second prize (\$2,000) to Yilin Pei of the University of Florida, Gainesville; and third prize (\$1,500) to Samuel Chanjaplammoitol, Kevin Hooper and Michael Jaco of Texas Tech University, Lubbock.

The three winning entries were deemed most effective in reinforcing for an 11-to-13-year-old audience how engineers are "cool" and improve the quality of life. The three-judge panel included: Andrew Quecan and Suzette Presas, electrical engineering graduate students and IEEE student members at the University of South Florida, Tampa; and Nate Ball, a mechanical engineer and host of PBS' "Design Squad." IEEE-USA will launch its '08-'09 online engineering video scholarship competition in September. To view the winning entries, go to http://www.ieeeusa.org/communications/video_competition/

Tennessee Congressman to be Honored for Science, Engineering and Technology Leadership
WASHINGTON (4 March 2008)-- Rep. Bart Gordon (D-Tenn.) will receive the 2008 George E. Brown Jr. Science, Engineering and Technology Leadership Award today for his leadership and commitment to ensuring that the United States remains a global leader in science and innovation.

Gordon, chairman of the House Science and Technology Committee, will be honored at a reception in the Rayburn House Office Building (rooms B339-340) from 5:30 p.m. to 7:30.

Gordon has been a tireless champion of the need to invest in America's future through strong federal funding for science, technology, engineering and mathematics research and education. He was the lead House negotiator for the "America Competes Act" (H.R. 2272), authorization legislation that is designed to help the United States maintain its global leadership in science and technology. It was signed into law on 9 August 2007.

Gordon's award coincides with the 50th anniversary of what is now the House Science and Technology Committee. Stunned by the Soviet Union's launch of Sputnik, the United States realized the need for a firm commitment to scientific and technological research and development. Formation of the committee was a key part of what has become a great American success story: federal funding for science and technology research and education that has spurred innovation, created jobs and kept America on the leading edge of scientific discovery.

The George E. Brown Jr. Science, Engineering and Technology Leadership Award is presented annually by the Science, Engineering and Technology Work Group (SETWG) to members of Congress who are effective advocates of federal investment in science and technology. It is named for the late Rep. George E. Brown Jr., a

longtime member of Congress who made outstanding contributions to federal support for science and technology over his distinguished congressional career.

The award is presented each year in conjunction with SETWG's Congressional Visits Day (CVD), the preeminent yearly event during which hundreds of scientists and engineers from around the country come to Washington for two days of briefings and visits to their members of Congress. More than 250 people are expected to participate in 2008 CVD events (4-5 March). Visit www.setcvd.org for more information.

SETWG, of which IEEE-USA is a member, is an information network of professional, scientific and engineering societies, higher education associations, institutions of higher learning and trade associations. It is concerned about the future vitality of the U.S. science, mathematics and engineering enterprise. See www.agiweb.org/cvd/setwgrst.html

Dallas Engineer Recognized as the IEEE/IEEE-USA's 'New Face of Engineering'

WASHINGTON (5 March 2008) -- Dr. Rajarshi Mukhopadhyay, a mixed-signal design engineer with Texas Instruments in Dallas, is the IEEE/IEEE-USA's 2008 "New Face of Engineering." He is one of 14 young engineers recognized for this international honor.

The New Faces of Engineering is sponsored by the National Engineers Week Foundation, a coalition of engineering societies, major corporations and government agencies. The program highlights the vitality, diversity and rich contributions of engineers under 30. Each engineering society's top choice must hold an engineering degree, be employed as an engineer from two to five years, and have worked with projects that significantly affect public welfare or further professional development and growth.

Mukhopadhyay, 26, pioneered the development of ultra-high-data-rate wireless systems that can transfer data at greater than five gigabits (or billion bits) per second. Using current wireless data transfer rates of around 100 megabits (or million bits) per second, it takes minutes to download music or video onto an iPod. By comparison, using Mukhopadhyay's innovations, a 17-gigabit DVD can be downloaded in less than three seconds.

He is presently contributing to expanding Texas Instruments' business in disk drive technology to develop the industry's fastest read/write speeds, error-free data transfer and improved energy efficiency.

Mukhopadhyay earned his bachelor of technology degree with honors from the Indian Institute of Technology in Kharangpur, West Bengal, India, in 2002. He added a master's (2004) and doctorate (2006) from Georgia Tech in electrical and computer engineering. He was only 25 when he earned his Ph.D.

Mukhopadhyay is a member of the IEEE Solid-State Circuits Society and the IEEE Microwave Theory and Techniques Society. He has published more than 20 technical papers (three invited) in IEEE journals and conferences and holds eight patents (issued and pending). His picture and bio appeared with the other New Faces of Engineering in a full-page ad in USA Today on 18 February. See <http://www.eweek.org/site/Engineers/newfaces2008/index.shtml>

An ad hoc committee of IEEE members Vern Johnson of Tucson, Ariz.; Paul Kostek of Seattle; Kiki Ikossi of Alexandria, Va.; and Lee Stogner of Taylors, S.C., selected Mukhopadhyay as the IEEE/IEEE-USA's New Face.

The committee's other top choices were Thomas Ainsworth, who works for the Northrop Grumman Corporation in Redondo Beach, Calif.; Jason Karns (Westinghouse Electric Co., Monroeville, Pa.); Lukas Kunz

(Raytheon Missile Systems, Tucson, Ariz.); and Laleh Samani (Motorola, Fort Worth, Texas). Their bios are available at <http://www.eweek.org/site/Engineers/newfaces2008/IEEE.shtml>

For more on all the 2008 “New Faces” honorees, go to
http://www.eweek.org/site/News/Eweek/2008_newfaces.shtml

The IEEE Cincinnati Section Executive Committee **Member Names and Phone Numbers**

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